

SHORTER NOTES

SANDSTONE ROCK CREVICES, AN EXCEPTIONAL NEW HABITAT FOR THELYPTERIS SIMULATA.—The Massachusetts or Bog Fern, *Thelypteris simulata* (Davenp.) Niewl., is a common wetland fern in the New England states. Most manuals give its typical habitat as very acid, shaded bogs and swamps, frequently in association with sphagnum moss. In some New England cranberry bogs, the fern is so abundant as to be a weed. Hartley (*Rhodora* 67:399–404, 1965) reported for the first time *T. simulata* from Wisconsin, a disjunction of approximately 600 miles from the nearest station in West Virginia. Since the original discovery, twelve other stations have been found for *T. simulata* in west-central Wisconsin. The Wisconsin habitats are all flat, low-lying woods with a moist layer of peat about one foot thick overlying sand. The dominant trees usually are *Pinus strobus* and *Acer rubrum*, and the most common understory species *Alnus rugosa* and *Ilex verticillata*. The most abundant herbaceous plant at most sites is *Osmunda cinnamomea*. Other characteristic ground layer associates include *Carex brunnescens*, *C. folliculata*, *C. trisperma*, *Dryopteris intermedia*, *D. spinulosa*, *D. × triploidea*, *Maianthemum canadense*, *Mitchella repens*, *Osmunda regalis*, *Rubus hispidus*, *Sphagnum* spp., and *Viola incognita*. It seems likely that in presettlement times, before the natural character of central Wisconsin was vastly changed by drainage ditches, peat fires, farming, etc., *T. simulata* was a common member of the low, wet-acid woods flora that once covered much of the sandy plain of extinct glacial Lake Wisconsin.

In mid-August 1979, I found a single plant of *T. simulata* growing one foot above the ground in the crevice of a sandstone cliff at Castle Mound, Castle Mound State Park, Jackson County, Wisconsin (T21N, R4W, SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 23). To my knowledge, there are no reports in the literature of *T. simulata* occurring on rock cliffs. The plant consisted of only eight sterile fronds, one of which was taken as a voucher (*Moran 995, MIL*). Two more fronds were taken on 13 Aug 1980 and checked by Dr. W. H. Wagner, Jr. for correct identity (*Moran 1267, MICH*). One of the fronds was soriferous, although all the sporangia were still white and immature; maturation was late compared with several other Wisconsin populations that were already actively sporulating.

Castle Mound is composed of Cambrian sandstone that rises 180 feet above the surrounding lake plain of extinct glacial Lake Wisconsin. It is typical of many weathered, castellated mounds found in the central Wisconsin sand plains. The *T. simulata* cliff habitat on Castle Mound faces north and is shaded by *Pinus resinosa*, *P. strobus*, and *Quercus rubra*. The soil reaction in the crevice where *T. simulata* was growing was pH 5.0. No other vascular plants were growing in the crevice with *T. simulata*. The cliff face immediately surrounding the plant was barren, except for one plant of *Dryopteris spinulosa* growing in a crevice about one foot above *T. simulata*. About ten feet above the plant was a ledge with numerous individuals of *Polypodium virginianum*, along with *Aquilegia canadensis*, *Athyrium filix-femina*, and *Betula papyrifera*.

Although it seems odd that *T. simulata* should occupy a dry sandstone cliff when its typical habitat is wet, acid bogs, usually in association with sphagnum moss, the two habitats are similar in certain respects. The wet, cold acid conditions of a bog make it physiologically difficult for roots to absorb water and mineral nutrients. Such a state of "physiological drought" simulates the dry, nutrient-poor crevices of a sandstone cliff. This type of habitat switch is known to experienced field botanists from other examples of swamp or bog plants growing on rocks, and vice-versa. A few such examples are: *Cystopteris bulbifera*, *Dryopteris marginalis*, *D. spinulosa*, *Ledum groenlandicum*, *Lorinseria areolata*, *Matteuccia struthiopteris*, *Osmunda cinnamomea*, *Phegopteris connectilis*, *Sphagnum* spp., and *Thelypteris palustris*.

Although *T. simulata* may have been common in the low wooded acid swamps that surrounded Castle Mound in presettlement times, the nearest presently known locality is two miles away. The Castle Mound individual certainly is the result of relatively wide-range spore dispersal. It is important to point out that, in view of Klewowski's (Science 153:305-307. 1966) ideas on the adaptive value of polyploidy in homosporous pteridophytes, the Castle Mound individual is most probably the result of single spore establishment and intragametophytic selfing.—*Robbin C. Moran, Wisconsin Scientific Areas Preservation Council, Department of Natural Resources, P.O. Box 7921, Madison, WI 53707.*

A SECOND ALABAMA LOCALITY FOR THE HART'S TONGUE.—The discovery of the Hart's-tongue, *Phyllitis scolopendrium* (L.) Newm., in a sinkhole in Jackson County, Alabama (Amer. Fern J. 69:47-48. 1979) generated interest in further searches for this fern among members of the Huntsville Grotto of the National Speleological Society who had participated in the find. According to Eric Bachelder, my guide to the Jackson County locality, these spelunkers found a second, larger population in a sinkhole in Morgan County soon after the original discovery (Huntsville Grotto Newsletter 20:49-50. 1979). On 31 May 1980, I visited the new locality with Mr. Bachelder again as my guide. The population is in a deep sinkhole in the area known as Newsome Sinks, a large sink-valley in northeastern Morgan County about 25 miles southwest of the Jackson County locality and 65 miles southwest of the one in Marion County, Tennessee. The sinkhole is about 70 feet deep and has sheer walls. A small stream falls into the sink, making the air very misty and humid, unlike the dry Jackson County sink. Also unlike the Jackson County sinkhole, it is necessary to rappel down to a wide ledge about half-way down, where most of the *Phyllitis* plants are. Fifty-three plants occur on the ledge, along with luxuriant *Cystopteris bulbifera* and Wood Nettle (*Laportea canadensis*), which may have obscured more *Phyllitis* plants. At least 20 Hart's-tongues were mature adults; the juveniles ranged from sporelings to almost adults. The ledge is partially overhung by the cliffs above, and the *Phyllitis* plants grow in a narrow strip beneath the overhang. The left end of the strip contains mostly adults and large juveniles; the plants toward the right are gradually reduced in size, age, and density. Apparently the population is spreading towards the right. Four fairly large Hart's-tongues also were seen at the bottom of the sinkhole. A number of fronds were collected as a voucher (*Short 1195*, AUA and duplicates to be distributed).—*John W. Short, 905 McKinley Ave., Auburn, AL 36830.*